REMARKS

Claims 1, 3, and 82 have been examined and are now pending in the application. Reexamination and reconsideration of all outstanding rejections and objections are requested.

Claims 1 and 3 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 5,368,392 (Hollander) in view of U.S. Patent 4,948,258 (Caimi).

The present invention, as defined, for example, in claim 1, includes a sighting arrangement having a laser aligned to illuminate a diffractive optical system to provide a diffraction pattern in the form of a light intensity distribution to identify and outline the size of the measurement spot by means of visible light. Examples of the patterns generated are depicted in Figs. 2c, 2e, 2d, 2g and 3e.

The reference Hollander discloses a radiometer with a laser sighting arrangement for outlining only the periphery of the energy zone imaged onto the IR sensor. For example, Figs. 2, 3, 4, 6, and 10 depict complicated mechanical devices for manipulating the laser optics to form a continuous circle outlining only the periphery of the energy zone. Fig. 2 depicts a two-component laser for generating separate beams outlining only the periphery of the energy zone. Fig. 10 depicts a beamsplitter including a bundle of fibers for generating a plurality of spots outlining only the periphery of the energy zone. Only Figs. 2 and 10 depict structures for splitting a laser beam into components.

The reference Caimi teaches a system for determining the range or profile of a test surface by passing a laser beam through a holographic grating structured to emit a divergent light beam defining a two-dimensional array of dots in a predetermined pattern and projecting the beam on a test surface. (Abstract) Subsequent patterns are projected on the surface and analyzed to profile the surface. (5:5-14) The differences in positions of each pair of reflections, i.e., spots reflected from the surface under evaluation (test surface) and corresponding spots reflected from the datum surface are related to and used to determine the range variation of the surface within a rectangular format reference cell on image plane coordinates. (6:46-55).

The examiner states that, referring to claim 1, it would have been obvious to modify the sighting arrangement disclosed in Hollander by replacing the optical element and motor of the sighting system with a holographic element, as taught by Caimi, to form a circular pattern in order to simplify the sighting arrangement by reducing the number of individual working parts.

This rejection is respectfully traversed for the following reasons.

MPEP §2143.03 requires that all claim limitations must be taught or suggested by the cited references. The cited references do not teach or suggest "a sighting arrangement having a laser aligned to illuminate a diffractive optical system to produce a diffraction pattern in the form of light intensity distribution for identifying and outlining the position and size of the measurement spot on the object of measurement by means of visible light" as recited in claim 1.

The office action acknowledges that Hollander does not teach a diffractive optical element utilized in the sighting arrangement.

The holographic element taught by Caimi generates a light beam pattern that is a two-dimensional array of dots used to determine the range or profile of a test surface. An example of the two-dimensional pattern is depicted as rectangular grid 12 in Fig. 2. (4:56). All the patterns are described as two-dimensional arrays of dots. Accordingly, the diffraction patterns generated by the diffractive element taught by Caimi are not capable of meeting the claim limitation that the diffraction pattern identifies and outlines the position and size of the measurement spot.

Further, although Caimi has been cited to show a diffractive optical element, Caimi is non-analogous art. A two part test is applied to determine whether a reference is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

An inventor working on designing alignment systems for a radiometer would not be charged with knowledge of developments in technology relating to profiling surfaces underwater. Further, the problem addressed in the Caimi reference is not reasonably pertinent to the problem with which the current inventor is involved. The problem of the current inventor is identifying a particular region on an object surface that is being imaged. There is no teaching in Caimi relating to solving this problem. The Caimi system seeks to project regular arrays of dots for analysis to profile a surface upon which the dots are projected. This regular array of dots has no utility in identifying and locating the energy zone as recited in claim 1.

Accordingly, the claimed diffractive optical system to produce a diffraction pattern in the form of light intensity distribution for identifying and outlining the position and size of the measurement spot on the object of measurement by means of visible light is not taught or suggested by any of the references in the claimed combination.

MPEP §2143.01 requires that a prima facie case of obviousness is not established if the proposed modification would change the principle of operation of a reference.

The basic principle of operation of the Hollander reference is the projection of a fine laser line or lines against the surface being measured and positioning such line or lines so as to encompass the periphery of the energy zone E. (Hollander, col. 5, lines 22-26). Once the periphery of an energy zone is identified, the laser beam is then projected about the periphery of the energy zone E in accordance with the methods and apparatus described in the reference. (*Id.*, col. 5, lines 44-47). The apparatus of claim 1 recites an apparatus that emits at least one laser beam and positions the laser beam about the energy zone to visibly outline only the periphery of the energy zone. (*Id.*, col. 8, lines 25-35, emphasis added).

Fig. 10 and the text at col. 7, lines 26-35 describe an embodiment utilizing a beamsplitter. The embodiment utilizes a plurality of optical fibers to project a plurality of fine laser lines to outline the periphery of the energy zone E.

As described above, the holographic system of Caimi generates a regular array of dots utilized to profile or range a test surface.

If the holographic element of Caimi were utilized in Hollander then the Hollander system could not operate to outline the periphery of the energy zone E. The regular array of dots projected by the Caimi system is incapable of outlining an energy zone. Accordingly, the modification proposed in the office action changes the principle of operation of Hollander.

MPEP §2143.01 requires that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention only where there is some teaching or suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.

The motivation cited in the rejection is that replacing the optical element and motor of the sighting arrangement of Hollander with the holographic element, as taught by Caimi, to form a circular pattern would simplify the sighting arrangement by reducing the number of individual working parts.

However, the examiner does not specify any disclosure in Caimi that simplifies the sighting arrangement of Hollander. Fig. 1 of Caimi depicts a camera having a laser mounted by a mechanical structure with a holographic grating mounted by another mechanical structure. There is

no indication that the structure disclosed in Caimi would motivate a PHOSA to adapt the structure to be useful in the Hollander system.

Further, while simplification and reduction of moving parts may be general design goals, such goals are limited by the need for a device to perform its intended function. As described above, the holographic element of Caimi does not perform the required functions of Hollander.

Accordingly, the general goals of simplifying a device and reducing the number of moving parts are not sufficient to motivate the modification of a critical component of a device without additional teachings that the modification would enable the device to perform its intended function.

Claim 3 depends on claim 1 and is allowable for the same reasons.

Claim 82 is rejected under 35 U.S.C. §103(a) as being unpatentable over Hollander and Caimi, as applied to claims 1 and 3, and further in view of Fukui.

Claim 82 recites the limitations of claim 1 and additionally recites that the diffractive optical system generates a circular arrangement of more than two beams to outline and identify the energy zone.

Fukui discloses the use of a holographic element that diffracts light reflected by an optical disk and relates to a photo-detection device for recording information on an optical disk and retrieving recorded information in an optical recording/retrieving apparatus such as a CD player, a magneto-optical disk drive, or the like. (Abstract).

The examiner states that it would have been obvious to modify the device disclosed by Hollander and Caimi by making the holographic element to produce a circular light pattern, as taught by Fukui, since Hollander teaches that a circular light pattern is useful when using a radiometer having a circular field of view.

This rejection is respectfully traversed for the following reasons.

As described above, the combination of Hollander and Caimi does not fairly teach or suggest the combination recited in claim 1. The combination of these references with Fukui does not make claim 82 obvious.

As described above, the diffractive element of Fukui is utilized in a CD player or disk drive where dimensions are on the order of millimeters. The holographic element is used in a focusing system and there is no teaching relating to outlining an energy zone.

As taught by Hollander, most radiometers are fixed focus devices having a focal length of 60" and must form an image on a remote target (Fig. 1). Accordingly, the teaching of Fukui relating to uses of diffractive optical systems having focal lengths on the order of millimeters in essentially sealed devices, such as compact disc players and disk drives, would not have motivated the artisan to choose such a diffractive element instead of the seven embodiments disclosed in Hollander.

There is no teaching in Fukui that would motivate the artisan to use the diffractive optical system described in Fukui in a radiometer. Fukui does not teach that the use of a diffractive optical system, like that described in Fukui, would make a radiometer (as described in Hollander and recited in claim 1) lighter and less expensive to manufacture because that diffractive optical system is being used in a completely different environment. In fact, the use of the diffractive optical system described in Fukui could cause a radiometer to be heavier and more expensive to manufacture depending on such problems as the size of the laser and power supply required to make the spot visible and the techniques required for mounting and alignment. These factors would be entirely different in a radiometer and a compact disc player or optical servo system.

Further, the mere existence of diffractive optical systems as taught by Fukui is not sufficient to find claim 82 obvious. The Office Action fails to provide a reason why the artisan would have chosen to use the diffractive optical system instead of the embodiments disclosed in Hollander.

As described above, there is no teaching in Fukui that the use of diffractive optical elements would make the claimed combination lighter and less costly to manufacture. The only motivation for combining Hollander, Caimi, and Fukui comes from the teaching of the present patent application. However, the use of the Applicant's own disclosure as a roadmap to piece together unrelated parts of prior art references is prohibited.

Accordingly, claim 82 is deemed to be allowable in view of the cited references, singly or in combination.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (925) 944-3320.

Respectfully submitted,

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